C-A OPERATIONS PROCEDURES MANUAL

4.120.81.a Tandem Critical Device Tests

Attachment

C-A-OPM Procedures in which this Attachment is used.		
4.120.81		

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approved: ***Signature on File*** _____
Collider-Accelerator Department Chairman Date

V. Castillo

PASS SEMI-ANNUAL ACCEPTANCE TEST PROTOCOL

Division A Software Filename and Checksum: Title:_____ **Checksum:** _____

Division B Software Filename and Checksum: Title:_____ **Checksum:** _____

Initial testing complete:

Test Team Leader's Name (Print): _____ **Life Number:** _____

Test Team Leader's Name (Sign): _____ **Date:** _____/____/_____

Acceptance test procedure complete (following repairs and retesting if required):

Test Team Leader's Name (Print): _____ **Life Number:**_____

Test Team Leader's Name (Sign): _____ **Date:** _____/____/_____

Test results reviewed by:

Safety Section Head's Name (Print):_____ **Life Number:** _____

Safety Section Head's Name (Sign):_____ **Date:** _____/____/_____

Test results accepted by Radiation Safety Committee:

RSC Member's Name (Print):_____ **Life Number:** _____

RSC Member's Name (Sign):_____ **Date:** _____/____/_____

1.1 Test of Beam Plugs in Target Room 2

□	**VERIFY**	Tandem Control Room (**TCR)** sees **Target Room 2 Beam Stops (TR2 BS)** Div **A** □ and Div **B** □	**INSERTED**
	PLACE	**Beam Plug Tester (BPT)** on any Beam Plug [BP #_____]	
	EXTRACT	**BP# ___**	
□	**VERIFY**	**BP# ___**	**EXTRACTED**
□	**VERIFY**	**TCR** sees **TR2 BS** Div **A** □ and Div **B** □	**EXTRACTED**
	INSERT	**BP# ___**	
□	**VERIFY**	**TCR** sees **TR2 BS** Div **A** □ and Div **B** □	**INSERTED**
	REMOVE	**BPT** from **BP# ___**	

□ **Check for acceptance of Test of Beam Plugs in Target Room 2**

1.2 Test of Beam Plugs in Target Room 3

□	**VERIFY**	Tandem Control Room (**TCR)** sees **Target Room 3 Beam Stops (TR3 BS)** Div **A** □ and Div **B** □	**INSERTED**
	PLACE	**Beam Plug Tester (BPT)** on any Beam Plug [BP #_____]	
	EXTRACT	**BP# ___**	
□	**VERIFY**	**BP# ___**	**EXTRACTED**
□	**VERIFY**	**TCR** sees **TR3 BS** Div **A** □ and Div **B** □	**EXTRACTED**
	INSERT	**BP# ___**	
□	**VERIFY**	**TCR** sees **TR3 BS** Div **A** □ and Div **B** □	**INSERTED**
	REMOVE	**BPT** from **BP# ___**	

□ **Check for acceptance of Test of Beam Plugs in Target Room 3**

1.3 Test of Beam Plugs in Target Room 4

□	**VERIFY**	Tandem Control Room (**TCR)** sees **Target Room 4 Beam Stops (TR4 BS)** Div **A** □ and Div **B** □	**INSERTED**
	PLACE	**Beam Plug Tester (BPT)** on any Beam Plug [BP #_____]	
	EXTRACT	**BP# ___**	
□	**VERIFY**	**BP# ___**	**EXTRACTED**
□	**VERIFY**	**TCR** sees **TR4 BS** Div **A** □ and Div **B** □	**EXTRACTED**
	INSERT	**BP# ___**	
□	**VERIFY**	**TCR** sees **TR4 BS** Div **A** □ and Div **B** □	**INSERTED**
	REMOVE	**BPT** from **BP# ___**	

□ **Check for acceptance of Test of Beam Plugs in Target Room 4**

1.4 Test of MP6 and MP7 Beam Stops (BS)

□	**VERIFY**	MP6 **BS** is	**CLOSED**
□	**VERIFY**	**TCR** sees MP6 **BS** Div **A** □ and Div **B** □	**CLOSED**
□	**VERIFY**	MP7 **BS** is	**CLOSED**
□	**VERIFY**	**TCR** sees MP7 **BS** Div **A** □ and Div **B** □	**CLOSED**
	SHORT	**Terminals: KA15** [1,2]; **KA15** [5,6]; **KB15** [3,4]; **KB15** [7,8]	
□	**VERIFY**	**Terminals: KA15** [1,2] □; **KA15** [5,6] □; **KB15** [3,4] □; **KB15** [7,8] □are	**SHORTED**
	SHORT	**Terminals: KA15** [3,4]; **KA15** [7,8]; **KB15** [1,2]; **KB15** [3,4]	
□	**VERIFY**	**Terminals: KA15** [3,4] □; **KA15** [7,8] □; **KB15** [1,2] □; **KB15** [3,4] □ are	**SHORTED**
□	**VERIFY**	**TCR** sees **Interlock** Div **A** □ and Div **B** □	**O.K.**
	SHORT	**Terminals: KA40** [13,14]; **KA41** [13,14]	
□	**VERIFY**	**Terminals: KA40** [13,14] □; **KA41** [13,14] □ are	**SHORTED**
	SHORT	**Terminals: KB40** [13,14]; **KB41** [13,14]	
□	**VERIFY**	**Terminals: KB40** [13,14] □; **KB41** [13,14] □ are	**SHORTED**
□	**VERIFY**	**TCR** sees **MP6** Interlock Div **A** □ and Div **B** □	**O.K.**
□	**VERIFY**	**TCR** sees **MP7** Interlock Div **A** □ and Div **B** □	**O.K.**
	OPEN	**MP6** and **MP7 BS** at **Tandem Control Room (TCR)**	
□	**VERIFY**	**TCR** sees MP6 **Reach Back Timer** Div **A** □ and Div **B** □	**ENABLED**
□	**VERIFY**	**TCR** sees MP7 **Reach Back Timer** Div **A** □ and Div **B** □	**ENABLED**
□	**VERIFY**	MP6 **BS** is	**OPEN**
□	**VERIFY**	**TCR** sees MP6 **BS** Div **A** □ and Div **B** □	**OPEN**
□	**VERIFY**	MP7 **BS** is	**OPEN**
□	**VERIFY**	**TCR** sees MP7 **BS** Div **A** □ and Div **B** □	**OPEN**
	CLOSE	MP6 **BS**	
□	**VERIFY**	MP6 **BS** is	**CLOSED**
□	**VERIFY**	**TCR** sees MP6 **BS** Div **A** □ and Div **B** □	**CLOSED**
	CLOSE	MP7 **BS**	
□	**VERIFY**	MP7 **BS** is	**CLOSED**
□	**VERIFY**	**TCR** sees MP7 **BS** Div **A** □ and Div **B** □	**CLOSED**
	REMOVE	**Shorts** from **Terminals: KA15** [1,2]; **KA15** [5,6]; **KB15** [3,4]; **KB15** [7,8]	
□	**VERIFY**	**Terminals: KA15** [1,2] □; **KA15** [5,6] □; **KB15** [3,4] □; **KB15** [7,8] □are	**OPEN**

	REMOVE	**Shorts** from **Terminals: KA15** [3,4]; **KA15** [7,8]; **KB15** [1,2]; **KB15** [3,4]	
□	**VERIFY**	**Terminals: KA15** [3,4] □; **KA15** [7,8] □; **KB15** [1,2] □; **KB15** [3,4] □ are	**OPEN**
□	**VERIFY**	**TCR** sees **Interlock** Div **A** □ and Div **B** □	**FAIL**
	SET	**Key Bypass** switch to	**BYPASS**
□	**VERIFY**	**Key Bypass** switch is set to	**BYPASS**
□	**VERIFY**	**TCR** sees **Interlock** Div **A** □ and Div **B** □	**FAIL**
	OPEN	**MP6** and **MP7 BS** at **Tandem Control Room (TCR)**	
□	**VERIFY**	**TCR** sees MP6 **Reach Back Timer** Div **A** □ and Div **B** □	**ENABLED**
□	**VERIFY**	**TCR** sees MP7 **Reach Back Timer** Div **A** □ and Div **B** □	**ENABLED**
□	**VERIFY**	MP6 **BS** is	**OPEN**
□	**VERIFY**	**TCR** sees MP6 **BS** Div **A** □ and Div **B** □	**OPEN**
□	**VERIFY**	MP7 **BS** is	**OPEN**
□	**VERIFY**	**TCR** sees MP7 **BS** Div **A** □ and Div **B** □	**OPEN**
	CLOSE	MP6 **BS**	
□	**VERIFY**	**TCR** sees MP6 **BS** Div **A** □ and Div **B** □	**CLOSED**
	CLOSE	MP7 **BS**	
□	**VERIFY**	**TCR** sees MP7 **BS** Div **A** □ and Div **B** □	**CLOSED**
	SET	**Key Bypass** switch to	**OFF**
□	**VERIFY**	**Key Bypass** switch is set to	**OFF**

□ **Check for acceptance of Test of MP6 and MP7 Beam Stops**

1.5 Test of Reachback

	OPEN	**MP6** and **MP7 BS** at **Tandem Control Room (TCR)**	
□	**VERIFY**	**TCR** sees MP6 **BS** Div **A** □ and Div **B** □	**OPEN**
□	**VERIFY**	**TCR** sees MP7 **BS** Div **A** □ and Div **B** □	**OPEN**
	OPEN	Fuses **F10** and **F11**	
□	**VERIFY**	Fuses **F10** and **F11** are	**OPEN**
	CLOSE	**MP6** and **MP7 BS** at **TCR**	
□	**VERIFY**	MP6 **BS** is	**CLOSED**
□	**VERIFY**	**TCR** sees MP6 **BS** Div **A** □ and Div **B** □	**OPEN**
□	**VERIFY**	MP7 **BS** is	**CLOSED**
□	**VERIFY**	**TCR** sees MP7 **BS** Div **A** □ and Div **B** □	**OPEN**

□	**VERIFY**	**TCR** sees **MP6 Reachback**	**ENABLED**
□	**VERIFY**	At **MP6 NII Preaccel** PS **Interlock**	**ON**
□	**VERIFY**	**TCR** sees **MP7 Reachback**	**ENABLED**
□	**VERIFY**	At **MP7 NII Preaccel** PS **Interlock**	**ON**
	CLOSE	Fuses **F10** and **F11**	
□	**VERIFY**	Fuses **F10** and **F11** are	**CLOSED**
□	**VERIFY**	MP6 **BS** is	**CLOSED**
□	**VERIFY**	**TCR** sees MP6 **BS** Div **A** □ and Div **B** □	**CLOSED**
□	**VERIFY**	**TCR** sees **MP6 Reachback**	**DISABLED**
□	**VERIFY**	At **MP6 NII Preaccel** PS **Interlock**	**OFF**
□	**VERIFY**	MP7 **BS** is	**CLOSED**
□	**VERIFY**	**TCR** sees MP7 **BS** Div **A** □ and Div **B** □	**CLOSED**
□	**VERIFY**	**TCR** sees **MP7 Reachback**	**DISABLED**
□	**VERIFY**	At **MP7 NII Preaccel** PS **Interlock**	**OFF**

□ **Check for acceptance of Test of MP6 and MP7 Reachback**

1.6 Test of 12MW040 IN

□	**VERIFY**	**12MW040** is	**OUT**
□	**VERIFY**	**TCR** sees **12MW040**	**OUT**
	INSERT	**12MW040** at **Tandem Control Room (TCR)**	
□	**VERIFY**	**12MW040** is	**INSERTED**
□	**VERIFY**	**TCR** sees **12MW040**	**INSERTED**
	EXTRACT	**12MW040** at **Tandem Control Room (TCR)**	
□	**VERIFY**	**TCR** sees **12MW040**	**OUT**

□ **Check for acceptance of Test of 12MW040 IN**

1.7 Test of Div A RIS Unit for Power Supply A and Div B RIS Unit for Power Supply E

	SET	Div A **RIS** unit for **Power Supply** A **above**	**SETPOINT**
□	**VERIFY**	Div A **RIS** unit is **above**	**SETPOINT**
□	**VERIFY**	**TCR** sees **RIS Comp** Div **A**	**FAIL**
	SET	Div A **RIS** unit **below**	**SETPOINT**
□	**VERIFY**	Div A **RIS** unit is **below**	**SETPOINT**
□	**VERIFY**	**TCR** sees **RIS Comp** Div **A**	**O.K.**
	SET	Div A **RIS** unit **at**	**SETPOINT**
□	**VERIFY**	Div A **RIS** unit **at**	**SETPOINT**
□	**VERIFY**	**TCR** sees **RIS Comp** Div **A**	**O.K.**
	SET	Div B **RIS** unit for **Power Supply** E **above**	**SETPOINT**
□	**VERIFY**	Div B **RIS** unit is **above**	**SETPOINT**
□	**VERIFY**	**TCR** sees **RIS Comp** Div **B**	**FAIL**
	SET	Div B **RIS** unit **below**	**SETPOINT**
□	**VERIFY**	Div B **RIS** unit is **below**	**SETPOINT**
□	**VERIFY**	**TCR** sees **RIS Comp** Div **B**	**O.K.**
	SET	Div B **RIS** unit **at**	**SETPOINT**
□	**VERIFY**	Div B **RIS** unit **at**	**SETPOINT**
□	**VERIFY**	**TCR** sees **RIS Comp** Div **B**	**O.K.**
□	**VERIFY**	**TCR** sees **RIS Comp** Div **A** □ and **RIS Comp** Div **B** □	**O.K.**

□ **Check for acceptance of Test of Div A RIS Unit for Power Supply A and Div B RIS Unit for Power Supply E**

END OF TEST PROCEDURE

TTL: Sign for completion of initial testing: _____

Date: _____/____/_____

TTL: Sign for completion of final testing: _____

Date: _____/_____/_____